

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
17 February 2005 (17.02.2005)

PCT

(10) International Publication Number  
**WO 2005/014786 A3**

- (51) International Patent Classification<sup>7</sup>: **C12N 15/66**, 15/85
- (21) International Application Number: **PCT/US2004/022314**
- (22) International Filing Date: **9 August 2004 (09.08.2004)**
- (25) Filing Language: **English**
- (26) Publication Language: **English**
- (30) Priority Data:  
**60/492,965** **7 August 2003 (07.08.2003)** **US**
- (71) Applicant (for all designated States except US): **ATHER-SYS, INC.** [US/US]; 3201 Carnegie Avenue, Cleveland, OH 44115 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **VAN BOKKELEN, Gil, B.** [—/US]; c/o Athersys, Inc., 3201 Carnegie Avenue, Cleveland, OH 44115 (US). **BASU, Joydeep** [—/US]; c/o Athersys, Inc., 3201 Carnegie Avenue, Cleveland, OH 44115 (US).
- (74) Agents: **MCPHAIL, Donald, R.** et al.; Fleshner & Kim, LLP, P.O. Box 221200, Chantilly, VA 20153-1200 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— with international search report
- (88) Date of publication of the international search report:  
**22 September 2005**
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: **ENHANCED ENGINEERED CHROMOSOME FORMATION FROM ALPHA SATELLITE WITH ARTIFICIALLY INCREASED DENSITY OF CENP-B BOXES**

(57) Abstract: The invention relates to the discovery that the distribution of CENP-B boxes on the alpha-satellite DNA affects efficiency of the centromere and thereby, affects efficiency of chromosome formation. Therefore, engineered chromosome vectors with altered distribution of CENP-B boxes are described that can alter the rate of chromosome formation as desired. Engineered HORs, chromosome vectors, and chromosomes as well as methods of making the same are described and claimed.

WO 2005/014786 A3